Timber Supply Review

Arrowsmith Timber Supply Area

Information Report
May 2000

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Ministry of Forests

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Introduction

The British Columbia Forest Service is required by law to formally review the timber supply* in all timber supply areas* and tree farm licence* areas in the province. A review of each of the areas is completed at least once every five years. The main objectives of the reviews are:

- to identify the economic, environmental and social information that reflects the current forest management practices—including their effects on the short- and long-term timber supply
- to identify where improved information is required for future timber supply forecasts
- to provide the chief forester with information to make any necessary adjustments to the allowable annual cuts* for the next five years

* Throughout this document, an asterisk at the end of a phrase or word indicates that a definition can be found in the margin.

Objective of this document

The objective of this document is to provide an opportunity for public review of the draft data and management assumptions that will be applied in the upcoming timber supply analysis for the Arrowsmith timber supply area. This document represents the early stages of the timber supply review process and is intended to provide a non-technical overview of the draft data and management assumptions.

The upcoming *Arrowsmith Timber Supply Area Analysis Report* will be one of the documents that the chief forester will consider in making the allowable annual cut determination under Section 8 of the *Forest Act*. Public input is encouraged to ensure the best information is used in determining the allowable annual cut.

This report contains a general description of the data assumptions and current forest management practices related to timber supply for the Arrowsmith timber supply area. For the purpose of this timber supply review, current practices can be defined as the set of land-use decisions and forest management practices that are currently implemented and enforced. Future forest management objectives that may be established but are not currently implemented and enforced are not included.

Many of the draft data and management assumptions are summarized on pages seven through eleven. For a more detailed description of the information, please contact the South Island Forest District office in Port Alberni or the Vancouver Forest Region office in Nanaimo and request a copy of the *Arrowsmith Timber Supply Area Data Package* (see Appendix A). The public will have 30 days to review and comment on the information report and data package. A response form at the end of this document will assist you in providing your comments. Written comments will be accepted until June 12, 2000.

Timber Supply Review process

In British Columbia, a process of determining allowable annual cuts has been in place since the late 1940s. However, the process has changed significantly since then. More recently, the process has had some minor revisions designed to improve efficiency and encourage earlier public review through the release of this report.

Figure 1 (next page) illustrates the five-step process that has been developed for the Timber Supply Review for timber supply areas. The diagram indicates the current status of the timber supply review for the Arrowsmith timber supply area, and the estimated time required for each step.

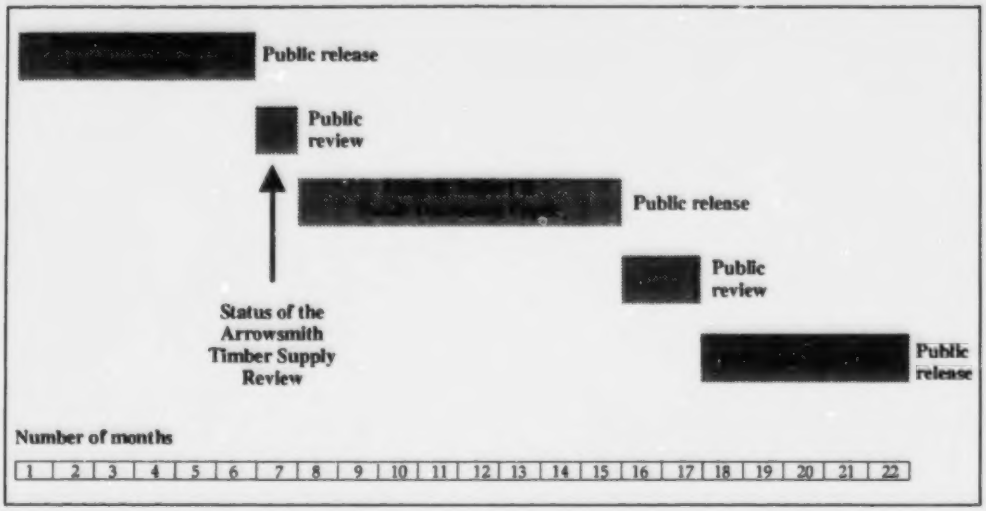
Timber Supply Review
in the Arrowsmith TSA

Timber supply
A harvest level that is forecasted to be available over time, under a particular management regime.

Timber supply area
An integrated resource management unit established in accordance with Section 7 of the *Forest Act*.

Tree farm licence
Provides rights to harvest timber, and outlines responsibilities for forest management, in a particular area.

Allowable annual cut (AAC)
The rate of timber harvest permitted each year from a specified area of land, usually expressed as cubic metres of wood per year.


Public release
Public review
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Public review
Public release
Status of the Arrowsmith Timber Supply Review
Number of months
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

Figure 1.
Review process for the Arrowsmith timber supply area.

The process for reviewing the timber supply and establishing the allowable annual cut for tree farm licence areas is based on similar principles; however, the process currently takes 30 months to complete. By the end of 2001, a new process for tree farm licences will take 20 months from start to completion.

The Chief Forester's responsibility

Determining the allowable annual cuts for Crown forest lands in British Columbia is the responsibility of the province's chief forester. It is one of the chief forester's most important responsibilities since it affects the local and provincial economies and environment—now and in the future. Section 8 of the *Forest Act* requires the chief forester to consider the following factors to determine allowable annual cuts for timber supply areas and tree farm licence areas:

a) the rate of timber production that may be sustained from the area, taking into account:
   - the composition of the forest and its expected rate of growth
   - the time in which the forest will become re-established
   - silvicultural treatments, including reforestation
   - standards of timber utilization
   - constraints on the amount of timber produced from the area due to use of the forest for purposes other than timber production
   - any other information which relates to the capability of the area to produce timber

a) the short- and long-term implications to the province of alternative rates of timber harvesting from the area

b) the nature, production capabilities and timber requirements of established and proposed processing facilities

c) the economic and social objectives of the Crown for the area, the region and the province, as expressed by the minister of forests

d) abnormal insect or disease infestations and major salvage programs planned for the timber on the area

Some of these factors can be measured and analyzed—others cannot. Ultimately, the chief forester's determination is an independent, professional judgement based on the best available information. Information that is relevant to the factors listed above is provided to the chief forester by government agencies, the minister of forests and the public.

One of the objectives of the Timber Supply Review is to incorporate changes arising from new information, new practices and new government initiatives that may have an impact on timber supply.

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In the event of significant change, the allowable annual cut may be reviewed in less than the required five years.

Following the release of the allowable annual cut determination by the chief forester, the minister of forests apportions the cut to various licences and programs.

Principles of the Timber Supply Review

In determining allowable annual cuts—in addition to the requirements outlined in Section 8 of the *Forest Act*—the following principles have been developed.

The Timber Supply Review:

- is a decision-making process for establishing the allowable annual cut for timber supply areas and tree farm licence areas by the chief forester on a maximum five-year cycle, as required under Section 8 of the *Forest Act*; **it is not a process for making land-use or management decisions;**
- incorporates the best information available, including all relevant current practices and identifies where new information is needed;
- reflects the results of implemented plans and land-use decisions, and provides a benchmark for future planning processes, and
- involves other agencies, affected groups and the public.

Description of the timber supply area

The Arrowsmith timber supply area is located on the southern half of Vancouver Island and includes the adjacent Gulf Islands. Relative to other forest management units on southern Vancouver Island, the timber supply area represents a relatively small and fragmented timber harvesting land base*. The Arrowsmith timber supply area covers approximately 169,000 hectares, making it the smallest timber supply area in the province.

In 1998, the Duncan Forest District and the Port Alberni Forest District amalgamated to form the South Island Forest District. The South Island Forest District administers the Arrowsmith timber supply area, as well as a number of tree farm licences from offices located in Port Alberni and Duncan.

The forest land resources

Numerous natural resources are associated with the forest land base. Forest products, recreation and tourism amenities, and significant wildlife habitat features highlight the wide range of values and uses found in the Arrowsmith timber supply area.

Most of the forested lands within the Arrowsmith timber supply area lie within one biogeoclimatic zone*, the Coastal Western Hemlock zone, with much of the remainder within either the Mountain Hemlock zone at high elevations or the Coastal Douglas-fir zone at lower elevations on the east side of Vancouver Island. The forests in the timber supply area are mainly comprised of Douglas fir, western redcedar, western hemlock, and subalpine fir (balsam). On the east side of the island, there has been a long history of timber harvesting and therefore a large proportion of the area is covered with younger, regenerating forests. In some cases, these forests are now ready for harvesting again. On the west side, where there has been a shorter history of timber harvesting, the forests are older.

The Arrowsmith timber supply area contains one of the richest and most diverse arrays of wildlife in Canada. Native mammals include black-tailed deer, Roosevelt elk, black bear, wolf, Vancouver Island marmot, beaver, pine marten, wolverine, short-tailed weasel, and several other furbearing species.

Timber harvesting land base
Crown forest land within the timber supply area that is currently considered feasible and economical for timber harvesting.

Biogeoclimatic zones
A large geographic area with broadly homogeneous climate and similar dominant tree species.

Native and migratory birds in the area include two red-listed (threatened or endangered) species - marbled murrelet and Queen Charlotte Island goshawk, and other birds such as the great blue heron and pileated woodpeckers.

Adjacent marine and estuary habitats support populations of Peale's peregrine falcons, bald eagles, trumpeter swans and harlequin ducks.

The coastal areas of Southern Vancouver Island support substantial migrating stocks of several salmon species including sockeye, pink, coho, chum, and to a lesser extent, chinook. The amount of habitat provided by streams and lake systems within the timber supply area is relatively low, with the exception of Barkley Sound and Alberni Inlet. Steelhead and cut-throat trout inhabit freshwater systems within the Arrowsmith timber supply area.

Managing forested viewscapes along both land and marine travel corridors is important within the timber supply area. The mountainous terrain, marine shorelines, numerous lakes and rivers provide a wide range of recreational and tourism opportunities within the timber supply area including wildlife viewing, sport fishing, boating, hiking and beach combing.

The majority of the Arrowsmith timber supply area is easily accessible to local residents as well as visitors from the Lower Mainland and southern Vancouver Island. In particular because of the high proportion of private land on the east side of southern Vancouver Island, the timber supply area provides the majority of existing opportunities for the public to access public forest lands.

The Communities

The municipalities within the Arrowsmith timber supply area include Port Alberni, Parksville, Qualicum Beach, Nanaimo, Ladysmith, Duncan and Victoria. In addition, there are significant populations in the Lake Cowichan and the Sooke-Port Renfrew areas. The timber supply area also encompasses several smaller communities including Tofino, Ucluelet, Lake Cowichan, Nanoose, Chemainus, Union Bay and Fanny Bay. There are also several small, unincorporated areas from Fanny Bay to Oyster Bay and a number of very small settlements on the West Coast.

According to the 1996 Census, the population of the timber supply area has increased 10 per cent since 1991 to approximately 545,489 people. Population growth was primarily in the Cowichan Valley and Nanaimo Regional Districts, and was concentrated in municipal areas. There were minor declines in population (0.3 per cent) in the City of Port Alberni, the Highlands District Municipality and Indian Reserves within the Nanaimo and Alberni-Clayoquot Regional Districts. It is anticipated that the overall population of the timber supply area will continue to grow at a strong rate.

First Nations

Twenty-nine First Nations with reserves or traditional territories are located within the Arrowsmith timber supply area.

All but three First Nations are represented by the following four tribal councils and two treaty associations: the Alliance Tribal Council; the First Nation South Island Tribal Council; the Mid-Island Tribal Council, the Nuu-chah-nulth Tribal Council; the Hul'qumi'nun Treaty Group; and the Te'Mexw Treaty Association. First Nations are becoming more active in the management of public forest lands and timber harvesting in their traditional territories. Some First Nations have entered into treaty negotiations.

In March 1994, a two-year Interim Measures Agreement between the provincial government and hereditary chiefs of the Nuu-chah-nulth Central Region Tribes was signed. The agreement established the Clayoquot Sound Central Region Board, which is a joint

management process between First Nations and provincial government appointees to oversee development in Clayoquot Sound, including implementation of the Clayoquot Sound Land-use Decision, and the recommendations of the Scientific Panel. In April 1996, the agreement was extended for a three-year period as the Interim Measures Extension Agreement. In March 2000, a new five-year extension agreement was signed.

The economy

Employment by sector varies within the Arrowsmith timber supply area. Overall employment is influenced highly by public sector employment in the City of Victoria, where approximately 60 per cent of the population resides. In the northern half of the timber supply area, the forestry sector is the second-leading employer supporting approximately 18 per cent of the labour force. The public sector in this area supports 30 per cent of the labour force and tourism supports 14 per cent.

Individual communities in the Lake Cowichan, Alberni, Duncan and Ladysmith areas are even more dependent on the forestry sector. Although still important, the forestry sector is less dominant in communities in the Parksville-Qualicum, Nanaimo and Sooke-Port Renfrew area. Only in Victoria, is the forestry sector a minor component of the local employment picture.

As shown in Figure 2, in 1996 the public sector (directly and indirectly) supported approximately 42 per cent of the total labour force. Tourism was the second largest sector supporting approximately 14 per cent of the labour force. The forestry sector accounted for about 9 per cent of the labour force including harvesting and silviculture* activities and workers at over 40 mills in and adjacent to the timber supply area.

Other sectors that help to diversify the economy of the Arrowsmith timber supply area are construction, mining, fishing and trapping, and agriculture.

The socio-economic analysis section of the upcoming timber supply analysis will review the role of the forest sector in the Arrowsmith timber supply area. To provide this update, current information on employment and fibre flows will be gathered from licensees, processing facilities, the BC Forest Service, and other stakeholders.

Silviculture
Activities that ensure the regeneration of young forests on harvested areas, enhance tree growth or improve wood quality in selected stands. Activities include: site rehabilitation and preparation, planting, spacing, fertilization and pruning.

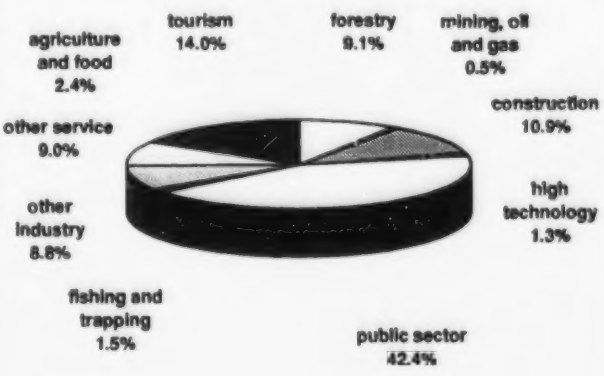

Figure 2.
Total employment by sector for the Arrowsmith timber supply area, 1996.

Notes: The "other industry" sector consists of employment in transportation and manufacturing not included elsewhere. "Other service" consists of employment supported by the spending of pension and investment income, and social transfer payments. "Forestry" employment consists of logging and forestry services, and wood products manufacturing. "Tourism" includes services that support holiday and business travel.
Source: The Forest District Tables, 1996 Ministry of Finance and Corporate Relations, April 1999.

Watershed
An area drained by a stream or river. A large watershed may contain several smaller watersheds.

Landscape unit
A planning area based on topographic or geographic features, that is appropriately sized (up to 100 000 hectares), and designed for application of landscape-level biodiversity objectives.

Biodiversity (biological diversity)
The diversity of plants, animals and other living organisms in all their forms and levels of organization, and includes the diversity of genes, species and ecosystems, as well as the evolutionary and functional processes that link them.

Land use planning

Vancouver Island Land-Use Plan

As a result of the 1994 Vancouver Island Land-Use Plan, more than 46 new parks were created and 81 per cent of the Crown lands and private managed forest lands have been established as part of the Forest Land Reserve.

New protected areas within the Arrowsmith timber supply area include: the Bowser Ecological Reserve, the Ladysmith Bog Ecological Reserve and Stamp River/Money's Pool Provincial Park. As these areas have now been formally designated they will not be included in the timber harvesting land base.

The Vancouver Island Resource Targets project was initiated to define the boundaries and resource management objectives and strategies for general management and enhanced development zones. It also refined the strategy for special management zones (formerly called low intensity areas). Technical recommendations for completion of the Vancouver Island Land-Use Plan have recently been released for public review. If these recommendations receive government approval and have been implemented before the chief forester makes an allowable annual cut determination, then they will be considered in the timber supply review.

Clayoquot Sound Land-Use Decision

The provincial government announced the Clayoquot Sound Land Use Decision on April 13, 1993. The area encompasses about 262,000 hectares including portions of the Arrowsmith timber supply area. This land-use decision increased protected areas and also established special management areas and general integrated management areas. Protected areas include: the Megin Watershed; Upper Shelter Inlet; Sydney Inlet; Hesquiat Peninsula and Trail; parts of Flores and Vargas Islands; Clayoquot Arm, Lake and Plateau. These areas have now been formally designated and those located within the Arrowsmith timber supply area will be accounted for in this timber supply review.

History of the allowable annual cut

On December 18, 1996 the allowable annual cut for the Arrowsmith timber supply area was set at 400,000 cubic metres, a reduction of 17 per cent. The allowable annual cut was partitioned as follows: 380,000 cubic metres for the area outside and 13,700 cubic metres inside the area covered by the Clayoquot Sound Land-use Decision, and 6,300 cubic metres for alder-leading stands.

As part of the 1996 determination, the chief forester gave direction to resolve uncertainties with respect to the timber supply in the Arrowsmith timber supply area. In preparation for the next allowable annual cut determination, the following issues were examined:

- **clarify management practices within Clayoquot Sound** - there was some uncertainty noted in the previous determination about the management practices within Clayoquot Sound.

  The provincial government is working with First Nations, the communities of Clayoquot Sound, and the Central Region Board to complete watershed*-level plans for Clayoquot Sound according to the recommendations of the Scientific Panel. Four of the fifteen watershed planning units are nearing completion. Once complete, these plans will clarify management practices in the area.

- **establishment of landscape-level biodiversity objectives** - at the time of the last determination, it was noted that landscape-level biodiversity objectives should be established. In addition, a long-term plan to meet those objectives should be developed, especially in the eastern portions of the timber supply area.

  Forest Service district staff , in conjunction with Ministry of Environment, Lands and Parks staff, have delineated draft landscape unit* boundaries and assigned biodiversity* emphasis options.

  Note: For more information on these points, please refer to the Arrowsmith timber supply area Rationale for Allowable Annual Cut Determination, December 18, 1996.

Current timber supply review

Public forest lands in British Columbia provide recreational enjoyment, fish and wildlife habitat, water supplies, timber resources and many other benefits. The Ministry of Forests manages the timber, range and recreation resources on public lands, and the Ministry of Environment, Lands and Parks manages fish, wildlife, water resources and parks. Both agencies subscribe to the principle of integrated resource management*, where all resources are considered when making forest management decisions.

The Forest Practices Code* is in effect and has been fully implemented in the timber supply area since June 15, 1997. The new practices may influence both the short- and long-term timber supply.

The data and management assumptions used in the timber supply analysis will be based on the existing land-use designations and forest management practices that are currently approved and implemented in the Arrowsmith timber supply area. Data and management uncertainties and their potential effects on timber supply will be examined through sensitivity analyses. The chief forester will also consider any new information, based on implemented changes, at the time of the allowable annual cut determination.

Draft data and management assumptions for public review

The public is encouraged to review the data and management assumptions for completeness and accuracy. In determining an allowable annual cut, the chief forester will consider these assumptions as required by Section 8 of the *Forest Act*. The following general outline contains a brief description of the more pertinent information that will be used in the timber supply analysis, and subsequently, in the chief forester's allowable annual cut determination for the Arrowsmith timber supply area. More detailed information can be found in *Appendix A: Data Package*. This appendix is available upon request from the Forest Service offices listed at the end of this report.

Draft data and management assumptions for the Clayoquot Sound area based on the Scientific Panel Recommendations*

Scientific Panel Recommendations
In October 1993, the province announced the formation of the Scientific Panel for Sustainable Forest Practices in Clayoquot Sound (the Scientific Panel). The Scientific Panel was tasked with reviewing the forest practices standards in effect in Clayoquot Sound at that time and making recommendations to ensure that practices would be sustainable. In May 1995, the Scientific Panel submitted to government a three-volume report containing a total of 124 specific and 91 general recommendations on forest practices and First Nations' issues in Clayoquot Sound. In July 1995, the government announced its acceptance of the Scientific Panel's report and its intention to fully implement the report's recommendations.
The extensive recommendations in the Scientific Panel's report represent a complex and significantly different approach to forest management from that practiced historically in the area.

Integrated resource management
The identification and consideration of all resource values, including social, economic and environmental needs, in resource planning and decision-making.

Forest Practices Code
Legislation, standards and guidebooks that govern forest practices and standards, with heavy penalties for violators.

Operability
Classification of an area considered available for timber harvesting. Operability is determined using the terrain characteristics of the area as well as the quality and quantity of timber on the area.

Environmentally sensitive areas
Areas identified as requiring special management to protect important recreation and scenic values, fisheries resources, sensitive soils and unstable slopes.

Mean annual increment (MAI)
Stand volume divided by stand age. The age at which average stand growth, or MAI, assumes its maximum is called the culmination age. Harvesting all stands at this age results in a maximum average harvest over the long term.

Due to the complexities of reflecting the Scientific Panel's recommendations in timber supply analysis, given that the watershed planning in not entirely complete, an area-based approach will be undertaken. Generally, the recommendations will be applied as follows:

- at least 40 per cent of the forested area within a watershed will be maintained as forests older than 140 years, and
- annual harvesting will be limited to a maximum of one per cent of the timber harvesting land base within each watershed.

Draft data and management assumptions for the area outside Clayoquot Sound

Land-base factors

- **operable area** - the forested area in the Arrowsmith timber supply area has been assessed for operability* based on economic and terrain attributes. Only areas where there has been a history of forest management activity, or where it is reasonable to expect future activity, will contribute to the timber harvesting land base.
- **low productivity sites** - in addition to the above, forest types that are not considered available for harvesting due to forest characteristics such as low timber volumes or low growth productivity will not contribute to the timber harvesting land base.
- **environmentally sensitive areas*** - the forest inventory includes a classification of areas considered to be environmentally sensitive and/or significantly valuable for other resources. In the Arrowsmith timber supply area, environmentally sensitive areas include areas with sensitive soils, forest regeneration problems, avalanche risk, watershed values, important wildlife habitat and recreation opportunities.

An evaluation of the environmental concerns and the past level of harvesting within these areas was undertaken. Based on this evaluation, all of the area with a high risk of avalanches will not contribute to the timber harvesting land base. A reduction factor of 90 per cent will be applied to areas identified with highly sensitive soils and regeneration problems. A reduction factor of 50 per cent will be applied to areas with moderate problems for forest regeneration, and a reduction of 20 per cent will be applied to moderately sensitive soils. Other reduction factors applied for environmentally sensitive areas for recreation and wildlife habitat are discussed below.

- **recreation** - areas designated as highly important for recreation will not contribute to the timber harvesting land base. One half of the areas designated as moderately important will be considered unavailable. In addition, 10 per cent of other recreation areas requiring special management that are not visually sensitive will be considered unavailable.
- **wildlife habitat** - a number of areas have been identified as important for ungulate (a hoofed herbivore) winter range and for other wildlife species. All of the area classified as highly sensitive wildlife habitat will be considered unavailable for harvesting in the timber supply analysis. One half of the area classified as moderately sensitive wildlife habitat will be considered unavailable for harvesting. In addition, specific areas for wildlife have been identified as partially—20 to 70 per cent—unavailable for harvesting.
- **forest roads, trails and landings** - harvesting and road construction follow regional and provincial guidelines. To account for existing roads, trails and landings, based on inventory data and local knowledge, reductions will be applied in the analysis to account for

the loss of productive forest area. To account for future roads, generally in stands greater than 80 years of age, a 4 per cent reduction factor will be applied in the eastern areas, and a 6.1 per cent reduction factor will be applied in the western areas. In future commercially thinned areas, a reduction of 3.6 percent will be applied.

- **cultural heritage resources** – cultural heritage resources and values in the Arrowsmith timber supply area generally include trap lines and sites of archaeological or traditional use. Most of the recorded cultural heritage sites are located on the west coast in close proximity to the coastline. To account for the protection and management of cultural heritage resources, a 7 per cent reduction will be applied to stands older than 80 years, with at least 20 per cent western redcedar or yellow cedar, and within 200 metres of the ocean's shoreline.

Inventory factors

- **forest inventory** - the dominant tree species in the Arrowsmith timber supply area are Douglas-fir, western redcedar, and western hemlock. Other tree species include balsam, spruce, western white pine, lodgepole pine, red alder and big leaf maple.
- **minimum harvestable ages** - for the timber supply analysis, the minimum harvestable age will be based on attaining the greater of: (a) the estimated age that stands will reach a minimum volume per hectare—300 cubic metres per hectare in the eastern areas, and 400 cubic metres per hectare in the western areas, (b) the age at which stands achieve a minimum mean diameter measured at 1.3 metres from the ground—25 centimetres in the eastern areas and 30 centimetres in the western areas, or (c) the age at which stands achieve 90 per cent of maximum mean annual increment*.

  For red alder stands, the minimum harvestable age will based on the greater of (a) 200 cubic metres per hectare, (b) the age at which stands achieve 90 percent of maximum mean annual increment or (c) up to a maximum of 70 years.

Forest re-establishment factors

- **basic silviculture** - British Columbia laws require that harvested areas expected to produce timber in the future must be reforested with ecologically acceptable species within a specified time frame. A variety of different silviculture* practices are used in the Arrowsmith timber supply area, such as clearcut harvesting* or clearcutting with reserves* and partial harvesting, followed by planting well-spaced trees of acceptable species and controlling competing vegetation. Natural regeneration also occurs on harvested areas, adding to the tree species diversity. In the timber supply analysis, to reflect current practice it is assumed that areas will be reforested within an average of one year following harvest.
- **tree improvement** - about 50 per cent of the seedlings planted in the Arrowsmith timber supply area are from seed orchards, which produce improved stock. Improved stock does not mean that the seedlings are genetically modified but rather that seeds are produced from a collection of superior parent trees selected from a large number of forest stands along the coast. Therefore, the seedlings produced from these parents exhibit qualities such as straight stem form, higher volume production, and tighter wood density. The potential increases in stand volume from improved stock will be examined in the timber supply analysis.

Timber utilization factors

- **timber utilization** – estimates of merchantable volume will be based on the utilization of all trees that meet or exceed the following standards. For coniferous* forests older than 120 years and red alder stands older than 45 years,

Silvicultural treatments
Activities that ensure the regeneration of young forests on harvested areas, enhance tree growth or improve wood quality in selected stands. Activities include: site rehabilitation and preparation, planting, spacing, fertilization and pruning.

Clearcut harvesting
A harvesting method whereby all trees that meet utilization standards are harvested. The harvested site is then regenerated to acceptable standards by appropriate means including planting and natural seeding.

Clearcutting with reserves
A variation of the clearcut silvicultural system in which trees are retained, either uniformly or in small groups, for purposes other than regeneration.

Coniferous
Coniferous trees have needles or scale-like leaves and are usually 'evergreen'.

Cutblock
A specific area, with defined boundaries, authorized for harvest.

Green-up
The time needed after harvesting for a stand of trees to reach a desired condition (usually a specific height) — to ensure maintenance of water quality, wildlife habitat, soil stability or aesthetics — before harvesting is permitted in adjacent areas.

Riparian habitat
The stream bank and flood plain area adjacent to streams or water bodies.

Wildlife tree
A standing live or dead tree with special characteristics that provide valuable habitat for conservation or enhancement of wildlife.

the standards are a minimum 15-centimetre top diameter inside bark, and a minimum 17.5-centimetre diameter measured at 1.3 metres above the ground. For second-growth coniferous forests less than 120 years and red alder stands less than 45 years, the standards are a minimum 10-centimetre top diameter inside bark and a minimum 12.5-centimetre diameter measured at 1.3 metres above the ground. For all stands, the maximum stump height is 30 centimetres.

Infestations, devastations and salvage of timber

Natural agents such as fire, wind, insects and disease damage a portion of the Arrowsmith timber supply area each year. The amount of area damaged each year is relatively small, of which most is salvaged and results in very little unsalvaged volume, approximately 2,000 cubic metres annually.

Factors to be considered for purposes other than timber production

Forest management guidelines used to manage forest resources such as biodiversity, scenic values, wildlife habitat and water quality will be included in the timber supply analysis through the use of forest cover requirements, and volume and land base reductions.

- **forest cover requirements** - under current forest management practices, cutblocks* must achieve green-up* before adjacent areas are permitted to be harvested. To account for forest cover requirements in the integrated management areas, a maximum of 25 per cent of the timber harvesting land base will be allowed to have forests less than three metres tall at any time. As well, considerations for maintaining areas of old-growth forests will be accounted for in the timber supply analysis (see biological diversity).
- **visually sensitive areas** - areas where the maintenance of scenic landscapes is a priority for recreation and tourism management, particularly adjacent to major travel corridors and waterways. Road construction and logging within these areas are planned and implemented to minimize visual impacts. Visual quality objectives and recommended visual quality classes have been established for scenic areas in the Arrowsmith timber supply area. Within scenic areas, trees must be at least 5 metres tall before adjacent areas can be harvested. Also, the maximum amount of visible forested area that may be covered with trees less than 5 metres tall ranges from 3 to 25 per cent, depending on the objective or class and whether it is within a highly or moderately visual area.
- **riparian habitat*** - to meet the requirements of the *Forest Practices Code*, a portion of the forested land base will be considered unavailable for timber harvesting to account for riparian reserve areas and riparian management zones along streamsides, lakeshores and swamps.
- **biological diversity** - or biodiversity, is the full range of living organisms, in all their forms and levels of organization, and includes the diversity of genes, species and ecosystems, and the evolutionary and functional processes that link them. The *Forest Practices Code* requires that biodiversity be managed at both the stand- and landscape-level.

  Stand-level biodiversity is managed in the Arrowsmith timber supply area by the retention of wildlife tree* patches. This practice will be accounted for in the timber supply analysis by reducing the average volume per hectare.

  Considerations for landscape-level biodiversity will be accounted for in the timber supply analysis by maintaining portions of the older forests within each draft landscape unit and natural disturbance type* as suggested in the

Landscape Unit Planning Guide, with the exception of the low biodiversity emphasis option. For low biodiversity, the older forest targets will be assumed to be phased in over the next 210 years.

- **community and coastal watersheds** - to account for management to protect water quality, harvesting in community watersheds will be limited to a maximum of 5 per cent of the area every 5 years. In two coastal watersheds—the Gordon River and Escalante River Watershed—coastal watershed assessments have been undertaken that specify forest cover requirements for hydrological recovery.

Implications of alternative rates of harvesting

- **alternative rates of harvesting** - there are many alternative harvest forecasts that can be produced for a given set of forest conditions and management assumptions. Each alternative usually represents a trade-off between the harvest level in the short term and the subsequent rate of decline in the long-term harvest level. For the projected base-case forecast*, the initial harvest forecast will be based on trying to achieve the current rate of harvest in the short term without compromising the long-term harvest level, and if necessary, allowing for gradual and managed transitions to lower harvest levels.
- **implications related to community dependence** - the impact of timber supply adjustments on local communities and the provincial economy is an important consideration in the Timber Supply Review.

The upcoming socio-economic analysis will use recent information to examine the potential socio-economic impacts associated with alternative rates of timber harvesting. Current information on employment and fibre flows will be gathered from the BC Forest Service, licensees, processing facilities and other stakeholders. Indirect and other related employment at both local and provincial levels will also be estimated using employment multipliers provided by the Ministry of Finance and Corporate Relations.

To examine the implications of alternative rates of harvest, employment co-efficients, reported in person-years* per 1,000 cubic metres, will be developed and used to estimate changes to employment levels now and in the future from any potential harvest level changes.

Timber processing facilities

The upcoming socio-economic analysis will examine the implications of potential changes in timber supply for the area's processing facilities. Southern Vancouver Island has the greatest concentration of timber processing facilities outside the Lower Mainland. There are approximately 12 major sawmills, 3 pulpmills, 1 paper mill, 1 veneer plant, 14 independent lumber mills, 8 cedar shake and shingle mills, and 3 log home builders operating in the area. In 1998, these mills processed approximately 5.3 million cubic metres of timber, and 1.6 million bone dry units of wood chips. A portion of this volume is harvested from the Arrowsmith timber supply area.

Economic and social objectives of the Crown

In a letter and a memo to the chief forester, the minister of forests has expressed the Crown's economic and social objectives for the province. The harvest flow objectives to be used in the timber supply analysis (see above, "Alternative rates of harvesting") are consistent with the minister's stated objectives.

In addition, economic and social objectives for the area and the general region will be derived from public input.

Natural disturbance type (NDT)
An area that is characterized by a natural disturbance regime, such as wildfires, which affects the natural distribution of seral stages. For example areas with less stand-initiating disturbance have more older forests, and generally a greater abundance of species.

Base case forecast
The timber supply forecast which illustrates the effect of current forest management practices on the timber supply using the best available information, and which forms the reference point for sensitivity analysis.

Person-year(s)
One person working the equivalent of one full year, defined as at least 180 days of work. If someone works full-time for 90 days, he or she accounts for 0.5 person years.

Your input is needed

Establishing the allowable annual cut is an important decision that requires well-informed and thoughtful public input. Feedback is welcomed on any aspect of this *Information Report*, the *Data Package Appendix* and other topics related to the timber supply in the Arrowsmith timber supply area. The response form at the end of this document will assist you in preparing your comments. As well, Forest Service staff would be pleased to discuss questions or concerns that may help you prepare your response.

Please mail the completed response form and your comments to the Forest Service district manager located at the address below. Your comments will be accepted until June 12, 2000.

After receiving public input, the Forest Service will finalize the data and management assumptions that will be applied in the timber supply analysis. The timber supply analysis will be complete and available for review by early 2001. You may also wish to participate in the second public review period, which will follow the release of the *Arrowsmith Timber Supply Area Analysis Report*.

Following the second public review period, the chief forester will examine all the information available in order to review the timber supply for the Arrowsmith timber supply area. The chief forester will then establish the allowable annual cut based on his consideration of the factors as required under Section 8 of the *Forest Act*.

You may identify yourself on your response if you wish. If you do, you are reminded that responses will be subject to the *Freedom of Information and Protection of Privacy Act* and may be made public. If copies of the responses are requested, personal identifiers will be removed before the responses are released.

For more information contact and/or mail your comments to:

Cindy Stern
District Manager
BC Forest Service
South Island Forest District
4227 6th Avenue
Port Alberni, BC
V9Y 4N1

Phone: (250) 724-9205
Fax: (250) 724-9261

or electronically mail to:
Rhonda.Morris@gems3.gov.bc.ca

Arrowsmith Timber Supply Area
Timber Supply Review

Information Report Response Form

The *Forest Act* requires the chief forester to consider the following factors to determine the allowable annual cut for timber supply areas and tree farm licence areas in the province, as follows:

- the rate of timber production that can be sustained from the area;
- the short- and long-term implications to the province of alternative rates of timber harvesting from the area;
- the nature, production capabilities and timber requirements of established and proposed timber processing facilities;
- the economic and social objectives of the Crown for the area, the general region, and the province, as expressed by the minister of forests, and;
- abnormal insect or disease infestations and major salvage programs planned for the area.

We welcome your review to ensure the best available information is considered for the Arrowsmith timber supply area. Please provide your comments on this form, or in another format. Input will be accepted until June 12, 2000.

A. Economic and social objectives

Please use the space below to provide your comments regarding the economic and social information contained in this report or other information that you believe should be considered in completing the social and economic analysis for the Arrowsmith timber supply area.

B. Reviewing the draft data and management assumptions

Please use the space below to provide your comments regarding the draft data and management assumptions contained in this report or other information that you believe should be considered in the timber supply analysis for the Arrowsmith timber supply area.

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_____

Name (optional):_____

Address (optional):_____

Mail or fax your comments to:

Cindy Stern
District Manager
BC Forest Service
South Island Forest District
4227 6th Avenue
Port Alberni, BC
V9Y 4N1

Phone: (250) 724-9205
Fax: (250) 724-9261

or electronically mail to:
Rhonda.Morris@gems3.gov.bc.ca

APPENDIX A

Data Package
Description of Data Inputs and Management Assumptions

This appendix is available upon request from the Ministry of Forests.

Offices are located at:

South Island Forest District
4227 6th Avenue
Port Alberni, BC
V9Y 4N1

Phone: (250) 724-9205

Vancouver Forest Region Office
2100 Labieux Road
Nanaimo, BC
V9T 6E9

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